FORSCHUNGS ZENTRUM GENERATIONEN VERTRÄGE

der Albert-Ludwigs-Universität Freiburg

DISKUSSIONSBEITRÄGE
DISCUSSION PAPERS

The Effect of Private Health Insurance on Self-assessed Health Status and Health Satisfaction in Germany

René Petilliot

No. 65 – June 2017

The Effect of Private Health Insurance on Self-assessed Health Status and Health Satisfaction in Germany

René Petilliot[1]

University of Freiburg

June 2017

Abstract

In Germany, private health insurance covers more innovative and costly treatments than public insurance. Moreover, privately insured individuals are treated preferentially by doctors. In this article, I use subjective health data to examine whether these superior features of private insurance actually transfer into better health. I focus on German adolescents who are still in education to control for selection and account for differences in health-conscious behavior between publicly and privately insured individuals. I find that privately and publicly insured individuals do not differ in health, which contrasts with previous research. Hence, doctors appear to be the sole profiteers of the private insurance system and billions of euros could be saved by aligning private and public health insurance.

JEL: I11, I12, I13, I18, I31

Keywords: Health satisfaction, Self-assessed health status, Private health insurance, Public health insurance, Selection

[1] Institute for Public Finance and Social Policy, University of Freiburg, Rheinstr. 10, 79104 Freiburg, Germany. Tel: +49(0) 761 203 9228. Email: rene.petilliot@econ.uni-freiburg.de. I would like to thank all participants of the Doctoral Seminar in Public Finance at the University of Freiburg for discussion, helpful comments, and review.

Introduction

In Germany, health insurance is compulsory and individuals can either participate in the public or the private health insurance system. Anecdotally, private health insurance is viewed as superior because for one thing, more innovative and costly – and thus supposedly better – treatments are covered. Additionally, privately insured individuals are treated preferentially by doctors, which manifests, for example, in waiting times that are significantly lower for privately than for publicly insured individuals (Lungen et al., 2008; Kuchinke et al., 2009).[2] However, whether these superior features of private health insurance actually transfer into better health has been examined only inconclusively so far. This is an important issue though, because billions of euros could be saved in the German health insurance system by aligning private and public health insurance.[3]

In this article, I use subjective well-being data as a proxy for individuals' health and empirically examine whether privately insured individuals are in better health than publicly insured individuals. Yet, estimating the effect of private health insurance on health is faced with several challenges. First, there could be reverse causation. In the German private health insurance system, premiums depend on health and age while they depend on income in the public system. Hence, individuals in good health tend to self-select into private insurance as they typically have to pay lower premiums in the private than in the public system. Individuals in poor health, on the other hand, choose public insurance, because they have to pay high premiums in the private system. They even could be rejected by private insurers, because contrary to the public health insurance system, there is no guaranteed issue in the private system. Self-selection, therefore, leads to a problem of reverse causation that has to be accounted for if we would like

[2] Note that this finding is also true for the US where Medicaid patients have higher waiting times than privately insured individuals who pay more for the same treatment (Medicaid Access Study Group, 1994; Asplin et al., 2005). Preferential treatment of privately insured individuals is the result of the remuneration structure in the German health insurance system. Even though remuneration for publicly and privately insured individuals is legally fixed, for the same treatment, the compensation for privately insured individuals is about 2.3 times as high as for publicly insured individuals (Walendzik et al., 2008).

[3] In an attempt to quantify those potential cutbacks, Walendzik et al. (2008) calculate an amount of 3.6 billion euros.

to identify the unbiased effect of private insurance on individuals' health. A second likely source of bias is that health-conscious behavior could differ between privately and publicly insured individuals.

Regarding self-selection, I argue that comparing privately and publicly insured adolescents who are still in the educational system allows me to effectively control for selection, because health insurance of this group is legally determined by their parents at birth and fixed until graduation from school. In addition, using data from the German Socio-Economic Panel (SOEP), I can control for health-conscious behavior, which enables me to account for incentives to invest in prevention but also, and most importantly, for habits that young people could adapt from their parents. Furthermore, by controlling for health-conscious behavior, I can at least partly account for selection of young people's parents into private insurance. A potential concern when focusing on the subpopulation of young people is that contact with doctors could be rare, suggesting that the treatment type of health insurance is not frequently taken up to have an effect on health. Yet, as is shown below, the average number of doctor visits in my sample is sufficiently high to resolve such doubts.

I find that privately insured individuals do not differ from publicly insured individuals with regard to subjective health, measured by self-assessed health status and health satisfaction. My results prove robust to several modifications and I conclude that even though private insurance covers more innovative and costly services and doctors treat privately insured individuals preferentially, those benefits do not transfer into better health. Hence, doctors appear to be the sole profiteers of the private insurance system and billions of euros could be saved if private and public health insurance get aligned.

The remainder of this article proceeds as follows. Section 2 describes the German health insurance system. Section 3 relates my article to the existing literature. Data and descriptive

statistics are presented in Section 4. Section 5 shows empirical results and robustness checks while Section 6 concludes.

Health Insurance in Germany

In 2015, 88.3 percent of the German population were insured in the public health system.[4] Here, coverage is universal and co-payments and deductibles are typically rare. 11.6 percent were insured in the private system where the extent of coverage can individually be chosen and co-payments and deductibles are a common feature.[5] The remaining 0.1 percent of the population had no health insurance at all even though it is compulsory in Germany.[6] The vast majority of the population is publicly insured, because due to legal access constraints, private insurance is eligible for only a small part of the population while there is guaranteed issue in the public health insurance system.

Typically, employees are publicly insured. Yet if their yearly gross income exceeds the so called compulsory insurance threshold, they are allowed to buy private insurance instead.[7] The compulsory insurance threshold is legally settled in the *Sozialgesetzbuch V* and, for example, has been at 56,250 euro yearly gross income in 2016.[8] Besides employees whose yearly gross income exceeds the compulsory insurance threshold, students, tenured civil servants, and self-employed are entitled to buy private insurance independent of income. All remaining adults, such as unemployed or pensioners, are compulsory insured in the public system.

Children's health insurance is legally determined by their parents at birth and depends on parents' health insurance. In particular, three alternatives arise. First, if both parents are

[4] Own calculation based on Federal Statistical Office of Germany (2017).
[5] Note that I follow Hullegie and Klein (2010) and refrain from estimating the effects of specific insurance characteristics but rather interpret my findings with regard to the fact that co-payments and deductibles are common features in the German private health insurance system.
[6] For example, self-employed have to buy either public or private insurance on their own. Yet even though obliged to do so, a significant number choose to buy no health insurance in order to save money. Additionally, homeless people and illegal immigrants often lack health insurance.
[7] Vice versa, if their income falls below the threshold, they generally have to switch back to public health insurance. One exception from this rule are pensioners. This group keeps the health insurance they had at age 55, because from this age on, changing insurance status is no longer possible by law.
[8] This threshold is quite high given that average income in 2016 was only around 32,000 euro in Germany.

privately insured, then children are compulsory insured in the private health insurance system with a premium required for each child.[9] Second, if both parents are publicly insured, children are automatically covered by the so called public family insurance where no premiums need to be paid.[10] Third, if one parent is privately insured and the other publicly, children can be either privately insured or publicly insured in the family insurance. Insurance coverage of children changes only in one of the following three cases: If they (i) take up employment within the scope of national insurance, (ii) exceed age 26, or (iii) register as being unemployed. Hence, as long as young people are in the educational system, they typically have the type of health insurance their parents have chosen at birth.[11]

Related Literature

My study relates to the literature on the health effects of private health insurance. For Germany, the few studies that exist on that topic assess the effect of private insurance on objective health indicators such as the number of doctor visits (Pohlmeier and Ulrich, 1995; Riphahn et al., 2003; Jürges, 2009) or the number of nights spent in hospital (Geil et al., 1997; Riphahn et al., 2003). A common drawback of these studies, which are all based on SOEP data, is that they do not control for selection into private insurance. Hence, the findings are likely to be biased, which makes it difficult to interpret them from a causal angle and to derive policy implications.

The study that relates most closely to my article is Hullegie and Klein (2010). They too use SOEP data to estimate the effect of private insurance on the number of doctor visits, the number of nights spent in hospital and, in addition, the quality of such services, approximated by respondents' self-assessed health status. To control for selection into private insurance, they take advantage of the legal rule that as soon as income exceeds the compulsory insurance

[9] The premium depends on age but, contrary to adults, not on health status and is thus quite low.
[10] For completeness, if both parents are statutorily insured, they can choose to privately insure their children. In such case, a premium is due for each child insured. This alternative is very rarely seen in the German health insurance system.
[11] Insurance status of young people who are in the educational system can change if their parents are no longer eligible to the private insurance system. Yet this is rarely seen and even if it happens, the change in insurance status is usually exogenous or at least the result of a decision that parents and not adolescents make.

threshold, individuals become eligible to switch from public to private insurance. They use this threshold as a discontinuity and apply a fuzzy regression discontinuity design (RDD). Hullegie and Klein find a negative effect of private insurance on the number of doctor visits, no effect on the number of nights spent in hospital, and a positive effect on self-assessed health status.

RDD is useful to estimate causal effects when the mechanism of assignment to treatment and control group is known. To draw causal inference, it is crucial that individuals who are very close to the threshold differ only in the characteristic of interest, insurance status in this case.[12] Hence, individuals should not be able to manipulate whether they are below or above the threshold. However, this assumption might not fully hold in case of insurance coverage. For example, individuals just below the threshold who want to switch to private health insurance could push for a tiny wage increase in order to get above it.[13] This argument works in the opposite direction as well, because typically it is very difficult to switch back from private to public insurance. Almost the only chance is to fall below the compulsory insurance threshold. Yet individuals who follow such strategies are likely to differ in various other unobserved characteristics from individuals who do not want to get above (below) the threshold to switch insurance coverage. In that case, the problem of selection persists and RDD does not identify the unbiased effect of insurance coverage on health.[14]

A further drawback of Hullegie and Klein (2010) – of which the authors are aware – might be that there is substantial measurement error in yearly gross income in their sample. This is demonstrated by several respondents who report to be privately insured although their yearly

[12] If this assumption holds, then RDD can be interpreted as a local randomized experiment, which gives the results a strong internal validity. A drawback, however, is that the effect is estimated only for a subpopulation and hence, comes at the expense of external validity.
[13] For example, individuals with family-specific adverse health genetics could decide to buy private insurance in younger years when they are in good health in an attempt to hedge against family-related diseases that may occur in the years ahead.
[14] Fuzzy RDD essentially is a two-stage least-square strategy. Hence, the exclusion restriction has to be fulfilled. If the decision to push income above/below the threshold is correlated with how individuals rate their health, then this condition is not fulfilled and the fuzzy RDD cannot be implemented.

income does not equal or exceed the compulsory insurance threshold in a given year; and who are neither students, self-employed, nor tenured civil servants – all of whom can opt out of public insurance without having an income exceeding the compulsory insurance threshold. Another shortcoming they are aware of is that their estimated positive effect of private insurance on self-assessed health appears to be too large: on a scale from 1 to 5 they estimate that privately insured individuals assess their health around 3.6 points higher than publicly insured individuals (Hullegie and Klein, 2010, Table V).

Taken together, I argue that focusing on adolescents who are still in the educational system and whose insurance status has thus been fixed since birth is a better strategy to cope with selection issues. It can nevertheless be the case that privately and publicly insured adolescents differ in unobserved characteristics such as the awareness of a healthy lifestyle. In particular, unobserved health-related behavior transmitted from parents to children may differ between privately and publicly insured individuals and bias results if not adequately controlled for. I try to account for such differences by controlling for a wide range of health-related characteristics, which I discuss in the next section. In addition, controlling for health-conscious behavior enables me to disentangle the effect of private insurance from the effect that privately insured individuals simply invest more in prevention. What is more, besides self-assessed health status, I extend Hullegie and Klein (2010) by using respondents' health satisfaction as an additional measure for the effect of private insurance on health.

Data and Descriptive Statistics

The SOEP is a representative household panel survey that has been conducted since 1984 and interviews around 20,000 individuals annually.[15] It has the advantage that it contains a wide

[15] Socio-Economic Panel (SOEP), data for years 1984-2014, version 31, SOEP, 2016, doi: 10.5684/soep.v31. For more information on the data, see Wagner et al. (2007).

range of information on various health characteristics and other socio-demographic characteristics that allow me to estimate unbiased health effects of private insurance.

To assess the effect of private insurance, I compare privately and publicly insured respondents who are still in the educational system with each other. Whether respondents are privately or publicly insured is captured by the question "What kind of health insurance do you have: statutory health insurance or are you exclusively privately insured?" From this question, I construct a binary indicator *Private* that equals one if respondents are privately insured and zero if they are publicly insured.

As dependent variable, I follow Hullegie and Klein (2010) and use respondents' self-assessed health status. In addition, I use respondents' reported health satisfaction, which is another subjective measure for health typically used in the literature. Respondents' self-assessed health status is categorically measured by the question "How would you describe your current health?" On a 5 point scale, responses range from "bad" (1) through "poor", "satisfactory", and "good" to "very good" (5).[16] Health satisfaction is captured by the question: "How satisfied are you with your health?" Here, responses range on an 11 point scale from 0 ("completely dissatisfied") to 10 ("completely satisfied").

Individuals' health satisfaction and health status depends to a large extent on their own health-conscious behavior such as smoking, having a disability or being obese. To account for health-conscious behavior, I include binary indicators for smoking and disability and calculate respondents' body-mass-index (BMI).[17] Since these variables are available for years 2004, 2006, 2008, 2010, 2012, and 2014 only, my analysis is restricted to these six waves. Additionally, I control for the number of doctor visits and the number of nights spent in hospital in the previous year.

[16] Note that I have reversed the ordering to facilitate the interpretation of the estimates.
[17] Note that the BMI indirectly also partly captures how often respondents do sports.

Another important factor for being healthy is health-conscious diet. Moreover, it is a habit that children may adapt from their parents and thus, controlling for it controls for unobserved health-related behavior transmitted from parents to children that may differ between privately and publicly insured individuals. Health-conscious diet is captured by the SOEP question "How much attention do you pay to maintain a healthy diet?" Respondents can choose between "a lot", "some", "a little", or "none". In the following, a dummy for each category enters my baseline model with "a lot" being the reference category.

For reasons discussed above, I restrict the sample to respondents who are still in the educational system. In Germany, this means that they either attend lower secondary school ("Hauptschule"), intermediate secondary school ("Realschule"), upper secondary school ("Gymnasium"), comprehensive school ("Gesamtschule") or specialized upper secondary school ("Fachoberschule").[18] To control for education, I construct binary indicators for each schooling type. Pupils in lower secondary school spend the shortest time in the educational system, pupils in (specialized) upper secondary school the longest time. In the latter, regular time is 13 years, which means that these pupils are around 20 years old on their graduation. To get a homogenous sample, I drop respondents who report to be in the educational system but are older than 22. This excludes 37 individuals, the oldest being 40 years old.

Besides health-related variables, I control for gender, age (age squared), (log) equivalent household income, (log) labor income, and whether respondents live in a city.[19] Additionally, I include federal state and year dummies in each regression. The final sample consists of 2,020 observations from 1,724 respondents who are between 16 and 22 years old. 1,595 observations (79 percent) are publicly insured, 425 (21 percent) are privately insured.[20]

[18] I do not consider respondents who attend evening secondary school, because they are in general adults and thus, do not have the type of insurance their parents have chosen at birth.
[19] Equivalent household income has been calculated using the OECD equivalent scale.
[20] In my raw sample, that is for the whole period 1992 to 2014 and not only the years 2004, 2006, 2008, 2010, 2012, and 2014, 97.35 percent of all individuals who have been publicly insured in the previous year are publicly

Table 1 shows differences in observed characteristics between publicly and privately insured respondents. Briefly, privately insured individuals are more likely to attend "Upper secondary school" and to live in a city. Moreover, privately insured pupils have a wealthier family background since equivalent monthly household income is notably higher. However, this is not surprising given that individuals can buy private insurance partly only if their income exceeds the compulsory insurance threshold.

A concern when focusing on young people could be that contact with doctors is rare, suggesting that the treatment health insurance coverage is not frequently taken up to have an effect on health. Yet in my sample, the number of visit to a doctor in the last year is on average 6 for publicly insured respondents and almost 8 for privately insured respondents, resolving such doubts. Finally, Table 1 provides first evidence that, compared to publicly insured individuals, privately insured individuals do neither score better in self-assessed health status nor in health satisfaction.

[[Table 1 about here]]

Empirical Results

Table 2 presents my baseline results. As a starting point, I take health satisfaction and health status as cardinal and apply Ordinary Least Squares (OLS) to facilitate the interpretation of the coefficients. But in a robustness check, I re-estimate the model treating the dependent variables as ordinal by means of an ordered probit model. Control variables as well as federal state and year fixed effects are included in each regression.

Column 1 shows that the descriptive difference in health satisfaction between privately and publicly insured respondents remains insignificant once observable characteristics are controlled for, indicated by the insignificant coefficient of the binary indicator *Private*. Column

insured in the current year as well. Excluding those individuals who switch insurance status does not alter the results.

2 confirms this result when self-assessed health status is used as dependent variable, which is in contrast to the results from Hullegie and Klein (2010) who estimate a positive effect of private insurance on self-assessed health status. In columns 3 and 4, I focus on the subsample of pupils who attend upper secondary school.[21] Doing this gives me an even more homogeneous sample than by merely controlling for educational differences. However, the estimates in both columns support my baseline estimates, implying that they do not depend on a specific sample composition. The estimates in Table 2 thus suggest that even though private health insurance covers more innovative and costly services and doctors have an incentive to treat privately insured individuals preferentially, these extra benefits appear to not transfer into better health.

[[Table 2 about here]]

In a first robustness check, I follow Jürges (2009) and control for current year's health status (health satisfaction) when health satisfaction (health status) is the dependent variable. As a result, the fit of my model increases notably, which is not surprising given that both variables are highly correlated. The average R^2 in Table 3 suggests that the model explains around half of the variation in the dependent variable, compared to around 16 percent in my baseline model. However, the coefficient of the binary indicator *Private* remains insignificant in each regression, providing evidence that my baseline results are not sensitive to this modification.

[[Table 3 about here]]

In a similar check, I pick up Hullegie and Klein's (2010) critique on potential endogeneity of Jürges' (2009) procedure by controlling for previous year's health satisfaction (health status) when current year's health satisfaction (health status) is the dependent variable. This allows me to capture not only differences in reporting inherently to individuals but also long-term health effects. Table 4 shows that the differences between privately and publicly insured individuals

[21] Note that due to the small sample size the focus on other educational subgroups is not feasible.

with regard to health satisfaction and self-assessed health status remain insignificant, indicating that not controlling for previous year's health does not bias estimates.[22]

[[Table 4 about here]]

Next, I check whether my results change when I consider the dependent variables as ordinal rather than cardinal. To check this, I re-estimate my model employing an ordered probit estimator but Table 5 shows that my baseline results prove robust to the choice of the estimator.[23]

[[Table 5 about here]]

In the same spirit, I use matching to estimate distinctions in health satisfaction and self-assessed health status between privately and publicly insured individuals. The average difference is estimated by performing nearest-neighbor propensity score matching with 5 neighbors and replacements on a probit model. Again, my baseline results prove robust to this modification. Taken together, the estimates in Table 5 and Table 6 suggest that the differences in health are not sensitive to the estimation method used.

[[Table 6 about here]]

In a last check, I use population weights provided by the SOEP when estimating the effect of private health insurance on health by means of an OLS model. Such weights have not been considered in any regression so far yet as Table 7 shows, this choice does not affect the results.

[[Table 7 about here]]

[22] I also sought to examine whether private health insurance is more vital for individuals who are in bad health by running the regression for the subsample of respondents who report their health status as "bad". However, this is not feasible given that there are only five respondents who report they are in bad health. 76 individuals report that their health status is "not good". Re-estimating the model for respondents of these two groups again leads to an insignificant coefficient. The results are available on request.

[23] For brevity, in Table 5, 6, and 7, I only depict the coefficients of the main explanatory variable(s) – in most cases the binary indicator variable *Private* that equals one if respondents are privately insured and zero otherwise.

Concluding Discussion

In this article, I use data on individuals' self-assessed health satisfaction and health status to examine whether individuals who have private health insurance are in better health than publicly insured individuals. We would expect that this is the case, because private health insurance in Germany covers more innovative and costly services and doctors treat privately insured individuals preferentially. To cope with selection into private insurance, I focus on respondents who are still in the educational system, because their health insurance is legally determined by their parents and fixed until they graduate from school. Using SOEP data enables me to account for differences in health-conscious behavior between privately and publicly insured individuals; most importantly, habits that young people could adapt from their parents. Furthermore, I can thereby at least partly account for selection of young people's parents into private insurance.

I find that privately and publicly insured respondents neither differ in health satisfaction nor in self-assessed health status, which is in contrast to previous research. My results prove robust to several modifications such as sample composition or choice of the estimator. I conclude that even though private insurance covers more innovative and costly services than public insurance and doctors have an incentive to treat privately insured individuals preferentially, those benefits do not transfer into better health. Hence, doctors appear to be the sole profiteers of the private health insurance system and billions of euros could be saved by aligning private and public health insurance.

However, it is important to remember that these conclusions need to be interpreted in light of the specific sample used. Focusing on respondents who are still in the educational system allows me to account for selection into private insurance but it comes at the expense of estimating the effect for a small subpopulation only. Moreover, even though I have implemented different strategies and techniques to overcome potential differences between privately and publicly insured respondents, both groups may nevertheless differ in ways that I am not able to account

for. Future research should therefore try to find quasi-experimental settings to increase internal and external validity of the results. This would allow drawing even firmer policy implications.

References

Asplin, B.R., Rhodes, K.V., Levy, H., Lurie, N., Crain, A.L., Carlin, B.P., Kellermann, A.L., 2005. Insurance status and access to urgent ambulatory care follow-up appointments. Journal of the American Medical Association 294 (10), 1248–1254.

Federal Statistical Office of Germany, 2017. Bevölkerung: Deutschland, Jahre, Geschlecht, Krankenkasse/Krankenversicherung (Tabelle 12211-0081). Accessed 4 April 2017.

Geil, P., Million, A., Rotte, R., Zimmermann, K.F., 1997. Economic Incentives and Hospitalization in Germany. Journal of Applied Economics 12 (3), 295–311.

Hullegie, P., Klein, T.J., 2010. The effect of private health insurance on medical care utilization and self-assessed health in Germany. Health Economics 19 (9), 1048–1062.

Jürges, H., 2009. Health Insurance Status and Physician Behavior in Germany. Schmollers Jahrbuch (Journal of Applied Social Science Studies) 129 (2), 297–307.

Kuchinke, B.A., Sauerland, D., Wubker, A., 2009. The influence of insurance status on waiting times in German acute care hospitals: an empirical analysis of new data. International Journal for Equity in Health 8 (44).

Lungen, M., Stollenwerk, B., Messner, P., Lauterbach, K.W., Gerber, A., 2008. Waiting times for elective treatments according to insurance status: A randomized empirical study in Germany. International Journal for Equity in Health 7 (1).

Medicaid Access Study Group, 1994. Access of Medicaid recipients to outpatient care. The New England Journal of Medicine 330 (20), 1426–1430.

Pohlmeier, W., Ulrich, V., 1995. An Econometric Model of the Two-Part Decisionmaking Process in the Demand for Health Care. The Journal of Human Resources 30 (2), 339–361.

Riphahn, R.T., Wambach, A., Million, A., 2003. Incentive effects in the demand for health care: A bivariate panel count data estimation. Journal of Applied Economics 18 (4), 387–405.

Wagner, G.G., Frick, J.R., Schupp, J., 2007. The German Socio-Economic Panel Study (SOEP): Scope, Evaluation and Enhancements. Schmollers Jahrbuch (Journal of Applied Social Science Studies) 127 (1), 139–170.

Walendzik, A., Greß, S., Manouguian, M., Wasem, J., 2008. Vergütungsunterschiede im ärztlichen Bereich zwischen PKV und GKV auf Basis des standardisierten Leistungsniveaus der GKV und Modelle der Vergütungsangleichung. Diskussionsbeitrag No. 165 Universität Duisburg-Essen.

Appendix

Table 1: Descriptive Statistics of Publicly and Privately Insured Patients

	Publicly		Privately		
Variables	Mean	SD	Mean	SD	Difference
Health satisfaction	8.051	1.731	8.083	1.545	-0.032
Health status	4.056	0.790	4.068	0.782	-0.012
Male	0.489	0.500	0.518	0.500	-0.029
Age	18.553	1.083	18.612	0.991	-0.066
Education					
Lower secondary	0.046	0.209	0.005	0.069	0.041***
Intermediate secondary	0.122	0.328	0.040	0.010	0.082***
Upper secondary	0.665	0.472	0.854	0.353	-0.190***
Comprehensive school	0.056	0.230	0.052	0.222	0.004
Specialized upper sec.	0.112	0.315	0.050	0.217	0.062***
Equiv. HH net income	1351.69	664.55	2362.86	1701.14	-1011.17***
Yearly labor income	465.426	1623.265	421.311	1262.529	44.115
City	0.660	0.474	0.767	0.423	-0.107***
Healthy diet	2.800	0.743	2.656	0.723	0.053
Smoker	0.203	0.402	0.200	0.400	0.003
Body-mass-index	21.986	3.540	21.828	3.429	0.158
Disability	0.011	0.106	0.007	0.084	0.004
Doctor visits	6.172	11.848	7.868	13.586	-1.696**
Hospital stays	0.574	6.739	0.228	1.202	0.345
Observations	1,595		425		

Source: SOEP v31.

Notes: * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level.

Table 2: OLS Estimates of the Health Effects of Private Health Insurance

Variables	(1) Satisfaction	(2) Status	(3) Satisfaction	(4) Status
Private	0.055	0.006	-0.003	-0.028
	(0.096)	(0.047)	(0.106)	(0.051)
Male	0.264***	0.171***	0.220**	0.187***
	(0.077)	(0.035)	(0.091)	(0.043)
Age	-0.145	-0.341	-0.226	-0.114
	(0.970)	(0.411)	(1.303)	(0.566)
Age squared	0.001	0.009	0.004	0.003
	(0.026)	(0.011)	(0.035)	(0.015)
Intermediate secondary	0.180	-0.139		
	(0.262)	(0.103)		
Upper secondary	0.006	-0.090		
	(0.249)	(0.097)		
Comprehensive school	0.061	-0.281**		
	(0.285)	(0.123)		
Specialized upper sec.	0.378	-0.044		
	(0.269)	(0.107)		
Equiv. HH income (log)	0.026	0.028	0.096	0.084*
	(0.087)	(0.041)	(0.098)	(0.046)
Labor income (log)	-0.012	-0.002	-0.016	-0.005
	(0.012)	(0.006)	(0.015)	(0.007)
City	0.099	0.032	0.085	0.031
	(0.107)	(0.048)	(0.129)	(0.056)
Some healthy diet	-0.103	-0.131	-0.187	-0.207**
	(0.182)	(0.086)	(0.204)	(0.102)
A little healthy diet	-0.342*	-0.248***	-0.570***	-0.344***
	(0.180)	(0.084)	(0.204)	(0.100)
None healthy diet	-0.105	-0.144	-0.209	-0.228**
	(0.202)	(0.096)	(0.226)	(0.115)
Smoker	-0.254**	-0.162***	-0.264**	-0.159***
	(0.102)	(0.045)	(0.127)	(0.058)
BMI	-0.039***	-0.012**	-0.046***	-0.023***
	(0.011)	(0.005)	(0.015)	(0.007)
Disability	-1.512***	-0.550***	-1.332***	-0.605**
	(0.412)	(0.195)	(0.503)	(0.248)
Doctor visits	-0.043***	-0.019***	-0.044***	-0.017***
	(0.006)	(0.003)	(0.009)	(0.004)
Nights in hospital	0.002	0.004	0.009	0.004
	(0.023)	(0.010)	(0.027)	(0.011)
Observations	2,020	2,020	1,423	1,423
R^2	0.155	0.138	0.166	0.140

Source: SOEP v31.

Notes: Standard errors clustered at the individual level in parentheses. * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. The dependent variable in columns 1 and 3 is respondents' health satisfaction measured on a 0 to 10 scale, where a higher value means more satisfaction. The dependent variable in columns 2 and 4 is respondents' self-assessed health status measured on a 1 to 5 scale, where a higher value means better health. The number of observations in columns 3 and 4 is lower, because only respondents who attend upper secondary school are considered to get an even more homogenous sample. Reference groups are female, lower secondary, urban area, a lot attention to maintain a healthy diet, nonsmoker, and no disability.

Table 3: OLS Estimates of the Health Effects of Private Health Insurance Controlling for Current Year's Health

Variables	(1) Satisfaction	(2) Status	(3) Satisfaction	(4) Status
Private	0.043	-0.011	0.026	-0.027
	(0.069)	(0.034)	(0.078)	(0.037)
Health satisfaction *t*		0.304***		0.312***
		(0.011)		(0.013)
Good health *t*	1.436		3.272***	
	(1.140)		(0.611)	
Satisfactory health *t*	2.976***		4.763***	
	(1.125)		(0.561)	
Not good health *t*	4.670***		6.487***	
	(1.123)		(0.555)	
Bad health *t*	5.716***		7.576***	
	(1.125)		(0.560)	
Observations	2,020	2,020	1,423	1,423
R^2	0.518	0.498	0.545	0.519

Source: SOEP v31.

Notes: Standard errors clustered at the individual level in parentheses. * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. The dependent variable in columns 1 and 3 is respondents' health satisfaction measured on a 0 to 10 scale, where a higher value means more satisfaction. The dependent variable in columns 2 and 4 is respondents' self-assessed health status measured on a 1 to 5 scale, where a higher value means better health. The number of observations in columns 3 and 4 is lower, because only respondents who attend upper secondary school are considered to get an even more homogenous sample. The reference group for health status is very good health.

Table 4: OLS Estimates of the Health Effects of Private Health Insurance Controlling for Previous Year's Health

Variables	(1) Satisfaction	(2) Status	(3) Satisfaction	(4) Status
Private	-0.012	-0.046	-0.060	-0.061
	(0.113)	(0.054)	(0.119)	(0.057)
Health satisfaction *t-1*	0.323***		0.306***	
	(0.031)		(0.034)	
Good health *t-1*		0.161		0.245
		(0.630)		(0.658)
Satisfactory health *t-1*		0.190		0.150
		(0.624)		(0.651)
Not good health *t-1*		0.664		0.617
		(0.622)		(0.649)
Bad health *t-1*		1.013		0.949
		(0.622)		(0.649)
Observations	1,149	1,149	894	894
R^2	0.580	0.556	0.584	0.548

Source: SOEP v31.

Notes: Standard errors clustered at the individual level in parentheses. * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. The dependent variable in columns 1 and 3 is respondents' health satisfaction measured on a 0 to 10 scale, where a higher value means more satisfaction. The dependent variable in columns 2 and 4 is respondents' self-assessed health status measured on a 1 to 5 scale, where a higher value means better health. The number of observations is in general lower, because previous year's health was not available for each respondent. The number of observations in columns 3 and 4 is in particular lower, because only respondents who attend upper secondary school are considered to get an even more homogenous sample. The reference group for health status is very good health.

Table 5: Ordered Probit Estimates of the Health Effects of Private Health Insurance

Variables	(1) Satisfaction	(2) Status	(3) Satisfaction	(4) Status
Private	0.028	0.027	-0.017	-0.032
	(0.065)	(0.072)	(0.075)	(0.079)
Observations	2,020	2,020	1,423	1,423
(Pseudo) R^2	0.050	0.070	0.058	0.077

Source: SOEP v31.

Notes: Standard errors clustered at the individual level in parentheses. * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. The dependent variable in columns 1 and 3 is respondents' health satisfaction measured on a 0 to 10 scale, where a higher value means more satisfaction. The dependent variable in columns 2 and 4 is respondents' self-assessed health status measured on a 1 to 5 scale, where a higher value means better health. The number of observations in columns 3 and 4 is lower, because only respondents who attend upper secondary school are considered to get an even more homogenous sample.

Table 6: Propensity Score Matching Estimates of the Health Effects of Private Health Insurance

	Privately	Publicly	Difference	S.E.	T-stat
Health satisfaction					
Unmatched	8.082	8.051	0.032	0.092	0.34
ATT	8.076	7.958	0.118	0.116	1.02
Health status					
Unmatched	4.068	4.056	0.012	0.043	0.29
ATT	4.064	4.075	-0.011	0.057	-0.19

Source: SOEP v31.

Notes: Propensity score matching estimates of the difference in health satisfaction and self-assessed health between privately and publicly insured respondents. Nearest neighbor matching with 5 neighbors and replacements on a probit model. Further information on the variables used can be found in Table 1.

Table 7: OLS Estimates of the Health Effects of Private Health Insurance Using Population Weights

Variables	(1) Satisfaction	(2) Status	(3) Satisfaction	(4) Status
Private	0.027	0.042	-0.003	-0.028
	(0.119)	(0.069)	(0.106)	(0.051)
Observations	1,981	1,981	1,423	1,423
R^2	0.167	0.149	0.166	0.140

Source: SOEP v31.

Notes: Standard errors clustered at the individual level in parentheses. * Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. The dependent variable in columns 1 and 3 is respondents' health satisfaction measured on a 0 to 10 scale, where a higher value means more satisfaction. The dependent variable in columns 2 and 4 is respondents' self-assessed health status measured on a 1 to 5 scale, where a higher value means better health. The number of observations is slightly lower as in the previous regressions, because some observations lack information on weights. The number of observations in columns 3 and 4 is lower, because only respondents who attend upper secondary school are considered to get an even more homogenous sample. Contrary to previous results, population weights provided by the SOEP have been considered in each regression.

Forschungszentrum Generationenverträge
Albert-Ludwigs-Universität Freiburg
Rheinstraße 10/12
79104 Freiburg
Fon 0761 . 203 23 54
Fax 0761 . 203 22 90
www.generationenvertraege.de
info@generationenvertraege.de